

DESTRUCTION OF SPAWNING GROUNDS OF MAHSEER AND OTHER FISH IN GARHWAL HIMALAYAS¹

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(With a text-figure)

INTRODUCTION

Mahseer is one of the grand game fishes of India. The one-time famous and favourite sport fish of most of the anglers is gradually nearing extinction. Raj (1945) has reported that mahseer has exhibited a gradual decline in Kumaun lakes attributed partly to indiscriminate fishing as well as to cannibalism in the species. According to Kulkarni & Ogale (1978) the use of explosives, killing of brooders, construction of multipurpose dams, 6 hours semi-quiet stage (in *Tor khudree*) and longer hatching period in cold waters are the main causes for the decline of mahseer. Pathani (1977, 1978), and Das & Pathani (1978) while surveying the Kumaun region have reported acute diminution both in size and population, especially in lake Nainital, attributed to increasing pollution, poaching, unscientific fishing of brood fishes and deficiency of oxygen. Recently Singh and Badola (1978) presented a report on seed destruction in Garhwal waters which is also one of the causes of gradual depletion in mahseer population. Whether the same phenomenon is in progress, has yet to be determined. The present contribution is to outline the ecological hazards which the Garhwal mahseer encounters and will ultimately be disastrous.

MAHSEER IN THE HILLSTREAMS OF THE PAURI GARHWAL HIMALAYAS

The Garhwal region comprises of five districts: Pauri, Tehri, Uttarkashi, Chamoli and Dehra Dun. The observations presented here relate only to Pauri district. River Alaknanda and Nayar are the two main hillstreams of this district, which harbour 43 species in all (Badola 1975). Of the two, the former is snow-fed while the latter is a spring-fed hillstream, and therefore the difference in their ichthyofauna.

Based on observations for the past one year (Jan. 1980 to April 1981) it was found that the population of *Schizothorax* spp. was very high as compared to other coldwater fishes including mahseer. The daily landings comprised primarily of *Schizothorax* species whereas mahseer was landed occasionally. It implies either the use of inefficient fishing implements or lesser number of individuals. Moreover, their number is apt to be less for the adults are temporary visitors (migrants) as they ascend the cold waters of Garhwal Himalayas during the pre-monsoon months. Their upstream migration is undoubtedly for spawning purposes (Singh & Badola 1978) but whether the various water bodies of Garhwal Himalayas can also serve as feeding grounds (Nikolsky 1963) is yet to be determined.

Only two species of mahseer, *Tor tor* and *Tor putitora* have been reported from the Garhwal region. However, the authors with,

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investigating various ecological aspects of Garhwal mahseer have observed that *Tor tor* are far less in number as compared to *Tor putitora*.

Having considered their habits, habitat and economic importance, a systematic analysis of the man-made hazards will give a clear picture of its ecological ignorance.

MAHSEER MIGRATION AND HAZARDS

The phenomenon of upstream migration is peculiar to *Tor* and *Labeo* spp. They ascend from river Ganga in the plains of Hardwar

is the impoundment of hydro-electric project (Chilla project) near Rishikesh. However, as it crosses Rishikesh en route to Deoprayag, it has to survive various traps set in the river. The consolation lies in the fact that man has not yet resorted to extensive dynamiting.

Migration into River Alaknanda: As the population of mahseer ascends the river Alaknanda and reaches Maletha (Fig. 1) it has to be more alert. From there upto Srinagar it faces severe fishing pressure. Some of the individuals also migrate further upstream.

Migration into River Nayar: River Nayar is a product of the Eastern and Western Nayar, the confluence being at a place known as Batkul Ka Sain, which is situated about 3 kilometres before Banghat (Fig. 1). The river stretches for 24 km (approx.) before it merges with Ganga at Byasghat which is about 40 km downstream of Srinagar, between Deoprayag and Byasi. The brood fish are found only when the river is flooded and turbid, during the monsoon months which extends from July to September. It implies that onset of monsoon along with high temperature is responsible for its ascent. Abundance of food does not seem to be an important factor governing migration.

As the brooders ascend they face severe fishing pressure because the river has a slow current as compared to Alaknanda and is easily accessible to man. Hence, various traps are set across the width of the river which prevents escape of the fish. Use of explosives throughout the year consequently leads to destruction of brood fish as well as the seed.

Nature of spawning grounds in Garhwal: The river banks, which, for most of the stretch is primarily of stones, pebbles and sand, at some places consist of almost high perpendi-

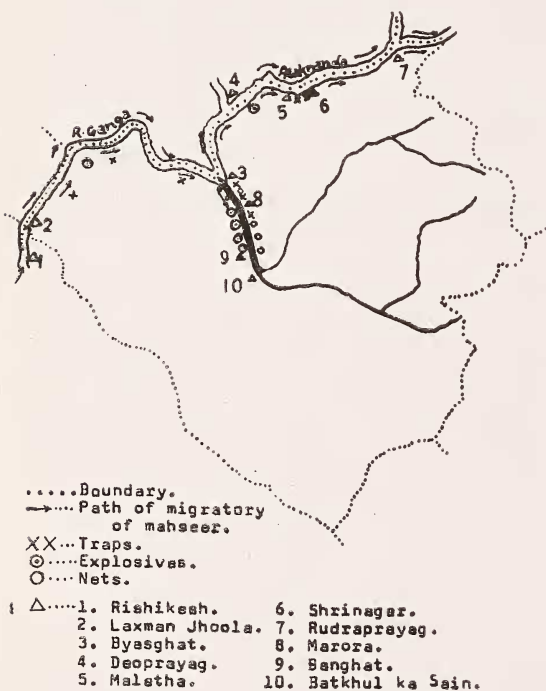


Fig. 1. Migration of Mahseer.

and Rishikesh and reach Deoprayag (Fig. 1) where some migrate into river Bhagirathi; while others continue the upward migration into river Alaknanda. The very first hurdle that it encounters on the onset of migration

cular rocky banks. In the pre-monsoon and monsoon months the rivers swell up with melted snow and rain water respectively, thus submerging the banks which consequently leads to the formation of spawning grounds.

During this period the river is characterized by warm, slightly alkaline and turbid waters along with optimum value of dissolved oxygen. Values of total alkalinity decline due to increasing turbidity and decreasing productivity, a factor which may not have any bearing on the brood fish since it probably does not feed actively during its course of spawning.

The brood fish, as reported by Badola & Singh (1984) lay a very large number of eggs in the shallow waters (35 cm to 50 cm) on or below the stones in the sand which provide an appropriate environment for the eggs to hatch. Pathani (1978) has also stated that mahseer always prefer flowing water and breed in shallow waters with sandy bottoms having a good amount of oxygen.

Besides stone and sand here and there, there exist patches of vegetation on the banks which too may serve as substratum as far as laying of carp eggs is concerned (Nikolsky 1963). The vegetation comprises mainly of hard grasses like *Saccharum* spp. and other shrubs like *Lantana americana*, *Calotropis procera* etc., which get submerged during monsoon.

Mahseer, however, was not found to breed in the Alaknanda. The latter serves as spawning grounds for *Schizothorax* and other species.

DESTRUCTION OF SPAWNING GROUNDS

The destruction of spawning grounds is a case of ecological ignorance. When the

swollen rivers recede, various contractors and local people carry away truckloads full of stones, pebbles and sand which constitute the spawning grounds. During each monsoon the river brings along with it more and more stones, pebbles and sand. Is the source inexhaustible? The main problem is that the stones are loaded from the spots which constitute the spawning grounds. If this process continues it will ruin the whole of the spawning grounds which may lead to extinction of the noble mahseer from this region.

CONCLUSION

Thoughtless destruction of these spawning grounds is undoubtedly disastrous.

In order to solve these hazards the Government should ban fishing of brooders, use of explosives, ichthyotoxic plants and over-fishing of juveniles. Further, better implements for fishing should be used to harvest the crop. Artificial or induced breeding must be undertaken to achieve a commercial magnitude so that various rivers and lakes of Garhwal Himalayas can be restocked. Above all detailed ecological and biological study of the mahseer is essential.

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* Not seen in original.